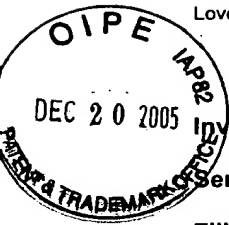


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ATTORNEY DOCKET NO. 10010016-1



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Peter G. Webb

Serial No.: 09/772,723

Examiner: Carolyn L. Smith

Filing Date: January 29, 2001

Group Art Unit: 1631

Title: Chemical Array Fabrication With Identity Map

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on Oct 21, 2005.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) **\$500.00**.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)(1)-(5)) for the total number of months checked below:

<input type="checkbox"/>	one month	\$ 120.00
<input type="checkbox"/>	two months	\$ 450.00
<input type="checkbox"/>	three months	\$1020.00
<input type="checkbox"/>	four months	\$1590.00

☐ The extension fee has already been filled in this application.

☒ (b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **50-1078** the sum of \$500.00. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account **50-1078** pursuant to 37 CFR 1.25.

A duplicate copy of this transmittal letter is enclosed.

EV 687 636 386 US

☒ I hereby certify that this correspondence is being deposited with the United States Postal Service as **Express** mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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☐ I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

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Respectfully submitted,

Peter G. Webb

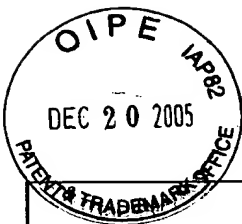
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Date: December 20, 2005

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APPELLANT'S BRIEF Address to: Mail Stop Appeal Brief-Patents Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Application Number	09/772,723
	Confirmation Number	1312
	Attorney Docket No.	10010016-1
	Filing Date	January 29, 2001
	First Named Inventor	Peter G. Webb
	Examiner	Carolyn L. Smith
	Group Art	1631
Title: <i>Chemical Array Fabrication With Identity Map</i>		

Sir:

This Brief is filed in support of Appellant's appeal from the Examiner's Rejection dated June 23, 2005. No claims have been allowed and Claims 1-14 and 45-54 are pending. Claims 1-14 and 45-54 are appealed. A Notice of Appeal was filed on October 21, 2005. As such, this Appeal Brief is timely filed.

The Board of Appeals and Interferences has jurisdiction over this appeal pursuant to 35 U.S.C. §134.

The Commissioner is hereby authorized to charge deposit account number 50-1078, order no. 10010016-1 to cover the fee required under 37 C.F.R. §1.17(c) for filing Appellants' brief. In the unlikely event that the fee transmittal or other papers are separated from this document and/or other fees or relief are required, Appellants petition for such relief, including extensions of time, and authorize the Commissioner to charge any fees under 37 C.F.R. §§ 1.16, 1.17 and 1.21 which may be required by this paper, or to credit any overpayment, to deposit account number 50-1078, order no. 10010016-1.

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REAL PARTY IN INTEREST

The inventor named on this patent application assigned his entire rights to the invention to Agilent Technologies, Inc.

RELATED APPEALS AND INTERFERENCES

There are currently no other appeals or interferences known to Appellant, the undersigned Appellant's representative, or the assignee to whom the inventor assigned his rights in the instant case, which would directly affect or be directly affected by, or have a bearing on the Board's decision in the instant appeal.

STATUS OF CLAIMS

The present application was filed on January 29, 2001 with Claims 1-44. During the course of prosecution, Claims 15-44 were canceled and Claims 45-54 were added. Accordingly, Claims 1-14 and 45-54 are pending and stand rejected in the present application, all of which are appealed herein.

STATUS OF AMENDMENTS

Amendments to the claims were filed subsequent to issuance of the Final Rejection on September 13, 2005. For purposes of appeal, the amendments after Final were entered.

SUMMARY OF CLAIMED SUBJECT MATTER

Below is a description of each appealed claim and where support for each can be found in the specification.

Independent Claim 1 claims a method of generating an addressable array of biopolymers on a substrate (see specification at page 3, line 9). The method comprises a) providing a plurality of individual vessels each containing a biopolymer wherein the plurality is provided in a defined format; (see specification at page 10, lines 9-14), b) assigning a unique format identifier to each member of the plurality; (see specification at page 10, lines 20-22), c) obtaining the biopolymers from the plurality of individual identified vessels; (see specification at page 3, lines 10-11), d) depositing the biopolymers onto different regions of the substrate so as to fabricate the array; (see

specification at page 3, lines 11-12), e) saving in a memory a map of the identity of the vessels to the corresponding regions of the substrate onto which the biopolymers from respective vessels are deposited, in association with a map identifier, wherein the map of the identity of the vessels comprises a unique format identifier of each vessel of the plurality; (see specification at page 3, lines 12-15), (f) applying the map identifier to the substrate or a housing carrying the substrate; (see specification at page 3, lines 14-15), and (g) shipping the fabricated array with applied map identifier to a remote location (see specification at page 3, lines 15-16).

Claim 2 depends from Claim 1 wherein the biopolymers are polynucleotides (see specification at page 3, line 9).

Claim 3 depends from Claim 2 wherein the biopolymers are DNA (see specification at page 3, line 9).

Claim 4 depends from Claim 1 wherein the memory is a database, the method additionally comprising obtaining the identity map from the memory and communicating the identity map to a remote location in response to receiving a communication of the map identifier from the remote location (see specification at page 4, lines 27-28 and page 3, lines 17-19).

Claim 5 depends from Claim 1 wherein the memory comprises a portable storage medium, the method additionally comprising shipping the portable storage medium to a remote location (see specification at page 3, lines 20-21).

Claim 6 depends from Claim 5 wherein the portable storage medium is shipped to the same remote location as the array (see specification at page 3, lines 20-21).

Claim 7 depends from Claim 4 additionally comprising applying a communication address to the substrate or a housing carrying the substrate, which communication address identifies a remote location from which the identity map will be communicated in response to a received communication of the associated map identifier (see specification at page 3, lines 17-19 and lines 22-25).

Independent Claim 8 claims a method of generating, at a central fabrication station, addressable arrays of biopolymers on multiple substrates (see specification at page 3, lines 31-32). The method comprises: (a) providing a plurality of individual vessels in a defined format each containing a set of biopolymers from multiple remote locations; (see specification at page 3, line 33-page 4, line 1), (b) assigning a unique

format identifier to each member of the plurality; (see specification at page 10, lines 20-22), (c) receiving from each of multiple remote locations, the set of biopolymers in the plurality of individual identified vessels; (see specification at page 3, line 32-page 4, line 1), (d) for each received biopolymer set, depositing biopolymers obtained from the set onto different regions of the substrate so as to fabricate an array; (see specification at page 3, lines 11-12 and page 16, lines 27-28), (e) saving in a memory a map of the identity of the vessels of each set to the corresponding regions of the substrate onto which the biopolymers from respective vessels of the set are deposited, in association with a map identifier, wherein the map of the identity of the vessels comprises a unique format identifier of each vessel of the plurality; (see specification at page 3, lines 12-15 and page 16, lines 29-32), (f) applying the map identifier to the corresponding substrate or a housing carrying the corresponding substrate; (see specification at page 3, lines 14-15 and page 17, line 8), and (g) shipping each of the fabricated arrays with applied map identifier to one or more of the remote stations (see specification at page 3, lines 15-16 and page 17, lines 12-16).

Claim 9 depends from Claim 8 wherein the biopolymers are polynucleotides (see specification at page 3, line 9).

Claim 10 depends from Claim 8 wherein the biopolymers are DNA (see specification at page 3, line 9).

Claim 11 depends from Claim 8 wherein the memory is a database, the method additionally comprising obtaining identity maps from the memory and communicating the identity maps to a remote location in response to receiving a communication of associated map identifiers from remote locations (see specification at page 4, lines 27-28, page 3, lines 17-19 and page 17, line 30-page 18, line 1).

Claim 12 depends from Claim 8 wherein for each of multiple arrays the corresponding identity map and associated identifier are saved on a memory comprising a portable computer readable storage medium, the method additionally comprising shipping the portable storage mediums to multiple remote locations (see specification at page 3, lines 20-21 and page 17, line 30-page 18, line 1).

Claim 13 depends from Claim 12 wherein each of the portable storage mediums are shipped with the corresponding fabricated array to the same remote location from which the set of biopolymers used in fabricating that array was received

(see specification at page 3, lines 20-21 and page 16, line 32-page 17, line 2).

Claim 14 depends from Claim 8 additionally comprising applying a same communication address to each of the substrates or housings carrying the substrates, which communication address identifies a remote location from which each identity map will be communicated in response to a received communication of the associated map identifier (see specification at page 3, lines 17-19, 22-25 and page 15, lines 12-20).

Claim 45 depends from Claim 1 and specifies that the plurality of individual identified vessels is in a format of a tray with multiple wells (see specification at page 10, lines 17-20).

Claim 46 depends from Claim 45 and specifies that the multiple wells are arranged in the tray in rows and columns (see specification at page 10, lines 18-20).

Claim 47 depends from Claim 46 and specifies that the individual identity of each vessel is an identifier in the format of: tray number, column number and row number (see specification at page 10, lines 20-21).

Claim 48 depends from Claim 46 and specifies that the individual identity of each vessel is an identifier assigned to each vessel relative to a reference mark (see specification at page 10, lines 29-31).

Claim 49 depends from Claim 14 and specifies that the plurality of individual identified vessels is in a format of a tray with multiple wells (see specification at page 10, lines 17-20).

Claim 50 depends from Claim 49 and specifies that the multiple wells are arranged in the tray in rows and columns (see specification at page 10, lines 18-20).

Claim 51 depends from claim 50 wherein the individual identity of each vessel is an identifier in the format of: tray number, column number and row number (see specification at page 10, lines 20-21).

Claim 52 depends from Claim 50 and specifies that the individual identity of each vessel is an identifier assigned to each vessel relative to a reference mark (see specification at page 10, lines 29-31).

Claim 53 depends from Claim 1 and additionally comprises receiving the array and map identifier and using the map identifier to identify vessels corresponding to regions of the array (see specification at page 4, lines 7-11).

Independent Claim 54 claims a method of generating an addressable array of

biopolymers on a substrate (see specification at page 3, line 9). The method comprises a) obtaining the biopolymers from a plurality of individual identified vessels, wherein each of the vessels is marked with a unique identifier that is not composition information from that vessel; (see specification at page 3, lines 10-11, page 10, lines 9-14 and page 18, lines 5-10), b) depositing the biopolymers onto different regions of the substrate so as to fabricate the array; (see specification at page 3, lines 11-12), c) saving in a memory a map of the identity of the vessels to the corresponding regions of the substrate onto which the biopolymers from respective vessels are deposited, in association with a map identifier, wherein the map of the identity of the vessels comprises an individual identity of each vessel of the plurality; (see specification at page 3, lines 12-15), d) applying the map identifier to the substrate or a housing carrying the substrate; (see specification at page 3, lines 14-15), and e) shipping the fabricated array with applied map identifier to a remote location (see specification at page 3, lines 15-16).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

- I. Claims 1-14, 45-52 and 54 stand rejected under 35 U.S.C. § 112, first paragraph for assertedly failing to comply with the written description requirement and assertedly containing new matter.
- II. Claims 1-14 and 45-53 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite for assertedly failing to particularly point out and distinctly claim the subject matter which the Appellant regards as the invention.
- III. Claims 1-14 and 45-54 stand rejected under 35 U.S.C. 103(a) as assertedly being obvious over Hunkapiller (US 5,942,609) in view of Zeleny (US 6,215,894), Brown (US 5,807,522), Anderson (US 6,456,942), Shakib (US 5,812,793) and Balaban (US 6,229,911).

ARGUMENT

I. Claims 1-14, 45-52 and 54 comply with the written description requirement of 35 U.S.C. § 112, first paragraph and do not contain new matter.

According to MPEP§ 2163.02:

To satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art, that as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed.

MPEP § 2163.2 further provides the following:

Generally, there is an inverse correlation between the level of skill and knowledge in the art and the specificity of disclosure necessary to satisfy the written description requirement. **Information which is well known in the art need not be described in detail in the specification** (emphasis added).

Claims 1-14 and 45-52

In the Final Office Action dated June 23, 2005, the Examiner asserts that there is lack of adequate written description for the providing step of the claims. In making this assertion, the Examiner states:

(1)The "providing" step in instant Claims 1 and 8 can be interpreted several ways. While there is written support for a customer providing multiple vessels to the central fabrication facility (page 10, lines 18-22), there does not appear to be adequate written support in the claims, specification, and/or drawings as originally filed, for the broadest interpretation of this step which includes other parties performing the providing, such as the central fabrication station location providing the plurality of individual vessels.

The Appellant submits that the "providing step" recited in instant Claims 1 and 8 has been adequately conveyed with reasonable clarity such that one of ordinary skill in the art, would realize that as of the filing date sought, Appellant was in possession of the invention as claimed.

Independent Claims 1 and 8 are drawn to methods of generating addressable arrays of biopolymers on multiple substrates, wherein the first step requires providing a plurality of individual vessels. As such, the "providing" step is simply providing the starting material, i.e., the biopolymers which are to be deposited onto the substrate

when fabricating the array. One of skill in the art would fully realize that the plurality of vessels recited in Claims 1 and 8 are provided by someone, such as a customer and if not, by someone at the fabrication station or anyone else who wishes to fabricate an array of biopolymers because the array cannot be fabricated without the starting materials.

As noted above, the Examiner acknowledges that there is adequate support for a customer providing multiple vessels but asserts that there does not appear to be adequate written support for the broadest interpretation of this step which includes other parties performing the providing, such as the central fabrication station location providing the plurality of individual vessels.

The Appellant maintains that the embodiment of the specification in which the customer provides the plurality to the central fabricator is merely representative of the different embodiments of the present invention. Further, one of skill in the art, from reading the specification, would know that any party may provide the plurality, including the central fabricator, and still come within the invention that was in the possession of the Appellant.

For Example the U.S. Court of Customs and Patent Appeals provides the following hypothetical in *In re Rasmussen*:

If the original specification of a patent application on the scales of justice disclosed only a 1-pound "lead weight" as a counterbalance to determine the weight of a pound of flesh, we do not believe the applicant should be prevented, by the so-called "description requirement" of the first paragraph of § 112, or the prohibition against new matter of § 132, from later claiming the counterbalance as a "metal weight" or simply as a 1-pound "weight," although both "metal weight" and "weight" would indeed be progressively broader than "lead weight," including even such an undisclosed, but obviously art-recognized equivalent, "weight" as a pound of feathers. The broader claim language would be permitted because the description of the use and function of the lead weight as a scale counterbalance in the whole disclosure would immediately convey to any person skilled in the scale art

the knowledge that the applicant invented a scale with a 1-pound counterbalance weight, regardless of its composition.

In re Rasmussen, 650 F.2d 1212, 1215 (C.C.P.A. 1981)

Similarly, one skilled in the art from reading the instant specification would understand that it features an identity map, which allows one to provide biopolymers in a plurality of vessels, deposit the biopolymers in a different spatial layout, and still be able to identify the particular source vessel for each biopolymer on the array. As such, it is unimportant who provides the plurality of vessels, so long as the biopolymers are provided in a plurality of vessels. Accordingly, this rejection may be withdrawn.

Additionally, in the Final Office Action, the Examiner alleges that the “providing” step in Claims 1 and 8 represents new matter.

However, as set forth above, the Appellant submits that the “providing step” is adequately supported throughout the specification, for example at p. 10, line 10, which states:

There is illustrated a particular format in which an end user of an array (sometimes referred to as a “customer”) may provide multiple vessels carrying different biopolymers to a remote central fabrication facility (emphasis added).

In view of the foregoing discussion, it is evident that the “providing step” recited in Claims 1 and 8 is adequately disclosed in the instant specification and does not represent new matter. Accordingly, the Appellant respectfully submits that the rejections under 35 U.S.C. § 112, First Paragraph have been sufficiently addressed and respectfully requests withdrawal of these rejections.

Claim 54

The Examiner further asserts that there is lack of adequate written support for the limitation of Claim 54 which recites “wherein each of said vessels is marked with a unique identifier that is not composition information from that vessel.” In making this assertion, the Examiner states:

3) Applicants point to support on p. 18 (lines 5-7) for the limitation of claim 54 reciting "wherein each of said vessels is marked with a unique identifier that is not composition information from that vessel." This section of page 18 (lines 5-7) does not mention anything about marking vessels or that the identifier with no composition information.

It is evident that the Examiner believes that the identifier of the present invention may also encompass composition information from that vessel, i.e., the identity of the biopolymer itself. However, the unique identifier of the present invention is an identifying mark which enables one to identify the original source vessel of a biopolymer deposited on the surface of an array. Furthermore, one of skill in the art from reading the instant specification would fully realize that the unique identifier is not compositional information but an identifier associated with an original source vessel.

Throughout the present application, the Appellant describes the unique identifier as specifically marking an individual vessel from the plurality of vessels provided. This allows the identity of the vessels to be mapped to the corresponding regions of the substrate, to which it was deposited. As such, the claimed identity map matches a unique identifier assigned to an original source vessel with its corresponding feature on the array. Therefore, the identity map provides the assigned unique identifier and its corresponding feature on the array. For example, the Appellant provides an exemplary embodiment of an identity map in Table 1 below.

TABLE 1

Vessel Identifier (tray, column, row)	Feature Identifier (column, row) with reference to upper left hand corner
1A1	A1
1A2	A2
1A3	A3
1C1	1C1
1C2	1C2

As evident from the examples provided in the specification at P. 10, lines 17-22, and Table 1 above, it is clear that the unique identifier is an identifying mark with respect to the specific location of a specific vessel, e.g., "tray number, column number, row number." Furthermore, it is clear that the unique identifier does not include compositional information from the vessel itself.

Moreover, in describing the processor at the user station, the specification teaches that once the processor has obtained the identity map it can obtain additional array layout information, such as the sequence identity of each polynucleotide in each well and hence the sequence identity of polynucleotides at array features. Accordingly, the specification clearly teaches that the polynucleotide sequences of each vessel are a completely separate entity from the identity map. As such, obtaining an identity map, which includes a unique identifier that is compositional information as asserted by the Examiner and then subsequently obtaining the same compositional information, i.e. sequence identity, is non-sensical.

Therefore, one skilled in the art from reading the instant specification would understand that the Appellant at the time of filing the application was in possession of the invention in which the unique identifier is an identifier which identifies an original source vessel that is not compositional information. Accordingly, the Appellant submits that the written description requirement is satisfied and this rejection may be withdrawn.

The Examiner further alleges that the phrase "wherein each of said vessels is marked with a unique identifier that is not composition information from that vessel" as stated in Claim 54 represents new matter.

As set forth above, the Appellant submits that the specification adequately supports the phrase "wherein each of said vessels is marked with a unique identifier that is not composition information from that vessel." For example, support may be found in the specification in Table 1 and p. 10, lines 17-22 as discussed above.

Therefore, because Claim 54 is adequately supported in the specification, it does not contain new matter, contrary to the Examiner's assertion.

In view of the foregoing discussion, the Appellant respectfully submits that the rejections under 35 U.S.C. § 112, First Paragraph have been adequately addressed and respectfully requests withdrawal of these rejections.

II. Claims 1-14 and 45-53 satisfy the requirements of 35 U.S.C. § 112, second paragraph.

Claims 1-14 and 45-54 were rejected under 35 U.S.C. § 112, second paragraph, as assertedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

The MPEP teaches that the requirements of 35 U.S.C. §112 are met if the claims of an application, when read in light of the specification, reasonably apprise one of skill in the art of what is being claimed.¹ In view of the foregoing discussion, the Appellant submits that the clarity requirements of 35 U.S.C. §112, second paragraph, have been met and this rejection may be withdrawn.

Claims 1-14 and 45-53

In the Final Office Action, the Examiner alleges that the phrase "providing a plurality" in Claims 1 and 8 is vague and indefinite because it is unclear who is doing the providing and to whom it is provided.

As demonstrated below, the Appellant respectfully submits that one skilled in the art would be able to ascertain the meaning of the term "providing a plurality" in light of the specification.

Independent Claims 1 and 8 are directed to methods of generating addressable

¹ 1 MPEP § 2173.05(a): "If the claims, read in light of the specification, reasonably apprise those skilled in the art both of the utilization and scope of the invention, and if the language is as precise as the subject matter permits, the statute (35 U.S.C. 112 second paragraph) demands no more."

arrays of biopolymers on multiple substrates, wherein the first step requires providing a plurality of individual vessels. As such, the “providing” step is simply providing the biopolymer starting materials in a plurality of individual vessels. Further, in the subsequent steps of generating an addressable array of biopolymers, the provided starting materials are deposited onto the surface of a substrate.

Therefore, it is evident that the subject methods are drawn to a method of fabricating an array of biopolymers. As such, someone must provide the starting material, i.e. the biopolymers in a plurality of individual vessels, to someone who will fabricate the array. One of skill in the art would fully realize that the plurality of vessels are provided by someone, such as a customer or anyone wishing to have an array of biopolymers fabricated. Furthermore, it is evident that the starting material is being provided to someone, who will fabricate the array, such as an array fabricator. The instant specification provides an exemplary embodiment of a customer providing a plurality of individual vessels to a central fabrication station at p. 10, lines 9-25 of the specification.

There is illustrated a particular format in which an end user of an array (sometimes referred to as a “customer”) may provide multiple vessels carrying different biopolymers to a remote central fabrication facility (sometimes referenced as a fabrication station) along with instructions to fabricate an array carrying features composed of the different biopolymers.

Clearly from the example above, a customer is “providing” the plurality of vessels to a remote central fabrication facility. As such, the Appellant submits that the term “providing for” is adequately described such that one of skill in the art when reading the specification would fully realize the metes and bounds of Claims 1 and 8. Therefore, this rejection may be withdrawn.

The Examiner further asserts that the phrase “each member” recited in Claims 1 and 8 is vague and indefinite because it is unclear if “each member” is referring to each vessel or each biopolymer.

One of skill in the art would understand the full meaning of "each member" from reading the disclosure of the present invention. As recited in Claims 1 and 8, "each member" of said plurality is assigned a unique format identifier. As demonstrated below in Figure 4, "each member" clearly refers to each vessel and not to each biopolymer.

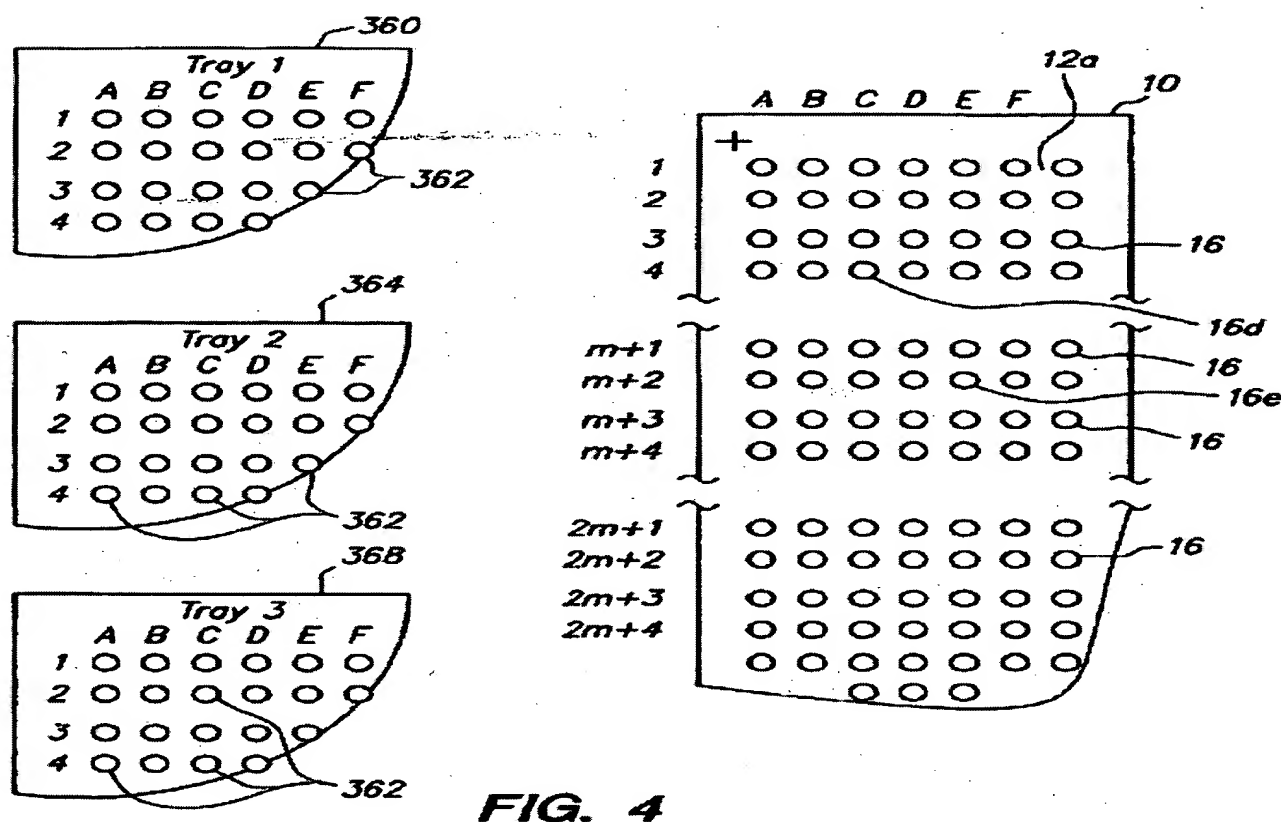


FIG. 4

In the illustrated example above, a customer has forwarded to the central fabrication station Trays 1-3, each containing a plurality of vessels in the form of wells (362). Each well has an identifier for example in the format "tray number, column number, row number." Thus, the well in column D, row 3 of Tray 2 has an identifier 2D3. As such, it is clear that the unique identifier is assigned to the actual vessel and not the biopolymer. One of skill in the art, from reading the disclosure, would fully understand that "each member" of the plurality refers to each vessel of the plurality of vessels provided. Therefore, the phrase "each member" is not vague and indefinite and this rejection may be withdrawn.

Claim 53

The Examiner alleges that the phrase “corresponding to” recited in Claim 53 is vague and indefinite because it is unclear what criteria and to what degree these criteria must be met to be considered to be corresponding.

In response, the Appellant submits that the term “corresponding” simply means the location on the array that has the biopolymer from the vessel. For example, as evident from Table 1 above, column 1 lists the unique format identifier assigned to each member of the plurality of vessels and column 2 lists the “corresponding” feature identifier. As such, the feature identifier in column 2 is the location of a biopolymer from a particular vessel deposited on the array. By matching the “unique identifier” in column 1 with the feature identifier in column 2 of the identity map, one may identify the original source vessel for each biopolymer deposited on the array. One of skill in the art would fully understand the meaning of “corresponding to regions of the array” as disclosed in the specification. As such, the phrase “corresponding to regions of the array” simply means that each original source vessel, which contains a specific biopolymer has a “corresponding” region on the fabricated array in which the same specific biopolymer has been deposited. Accordingly, this rejection may be withdrawn.

III. Claims 1-14 and 45-54 stand rejected under 35 U.S.C. 103(a) as being obvious over Hunkapiller in view of Zeleny, Brown, Anderson, Shakib and Balaban.

With respect to rejections made under 35 U.S.C. § 103, MPEP § 2142 states:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. **Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on

applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). [emphasis added]

It is respectfully submitted that the Examiner's *prima facie* case of obviousness is deficient because the combined teachings of the cited prior art fail to teach or suggest all the claim limitations of the rejected claims.

Claims 1-3 and Claims 8-10

Independent Claims 1 and 8 and the claims dependent thereon are drawn to a method of generating an addressable array of biopolymers. In particular Claims 1 and 8 specify that each member of a plurality of source vessels is assigned with a unique format identifier and that a map of the unique format identifiers assigned to each original source vessel is saved in a memory.

For the reasons set forth below, there is no teaching or suggestion in the combination of cited references of all of the elements of the claimed invention. Specifically, there is no teaching or suggestion of the element of the claims that requires one to assign each member of a plurality of source vessels a unique format identifier and then save in a memory a map of the unique format identifiers assigned to each original source vessel.

The format identifier physically identifies the original source vessel relative to other vessels in the original plurality, for example by tray number, column number, and row number. Furthermore, the claimed identity map is the collection of unique format identifiers assigned to each vessel in the plurality, which allows one to provide biopolymers in a plurality of vessels, deposit the biopolymers in a different spatial layout, and still be able to identify the particular source vessel for each biopolymer on the array.

For example, a customer wishing to fabricate an array may provide one 96-well plate and one 48-well plate, with each well containing a specific biopolymer. The customer may request that half of the 96-well plate and all of the 48-well plate be

deposited onto the array. As such, 48 biopolymers from plate 1 and 48 biopolymers from plate 2 will be deposited onto the array. According to the present invention, each well (member) within the 96-well and 48-well plate will be assigned a unique format identifier, such as tray number, column number, row number, so that an identity map can be generated. The identity map provides the identity of the original source vessels with the corresponding regions of the substrate.

In maintaining the rejection, the Examiner asserts the following: (1) Hunkapiller teaches a method of creating arrays with addressable locations where multiple biopolymer samples can be fixed or mounted in fixed locations (col.18, lines 11-21); (2) Zeleny describes an identifier corresponding to each experiment imprinted on the biochip (col.2, lines 13-14); (3) Brown describes mass fabrication of microarrays and shipment of DNA reagents via microarrays to researchers (col.2, lines 20-25 and col. 14, lines 36-42); (4) Balaban teaches that portable storage media may be used to carry information between computers (col.6, lines 16-18); (5) Anderson teaches the shipment of arrays from a synthesizer and the monitoring of the synthesizer from a remote location (col.2, lines 57-62); and (6) Shakib teaches the transfer of data or data sets from a remote station to another remote station and the ability to generate unique identifiers to data through a network, such as the internet (col.5, lines 28-32).

As demonstrated below, the combined teaching of the cited references provides no teaching or suggestion of the elements of assigning each member of a plurality of source vessels a unique format identifier and saving in a memory a map of the unique format identifiers assigned to each original source vessel.

In reading the Office Action, Zeleny is the reference relied upon by the Examiner to provide the elements of assigning a unique identifier to each member of a plurality of individual vessels and saving in a memory a map of the identity of the vessels made up of a collection of unique identifiers.

With respect to Zeleny, the Examiner asserts that Figure 1 shows multiple wells of an array that are arranged in rows and columns and numerical identifiers in which

some of the digits identify experimental parameters, source of the array, and the array itself. The Examiner further asserts that Zeleny describes a file opened on a computer system where the operator may enter various parameters of the experimental array including a map of the reagents deposited in the array, which represents a map of the individual identity of substances.

However, none of these identifications is a format identifier, in that it does not physically identify the original source vessel relative to other vessels in the original plurality, for example by tray number, column number, and row number. The Appellant's unique format identifier is distinguishable from Zeleny's "experiment identifier" (col.2, lines 13-14) because the vessel identifier is the unique format identifier assigned to the original vessel prior to fabrication of the array. Further, the claimed identity map is the collection of unique format identifiers assigned to each vessel in the plurality, which allows one to provide biopolymers in a plurality of vessels, deposit the biopolymers in a different spatial layout, and still be able to identify the particular source vessel for each biopolymer on the array. This is not possible with Zeleny's teaching.

As such, Zeleny, in combination with the other cited references, fails to disclose the elements of assigning each member of a plurality of source vessels a unique format identifier and saving in a memory a map of the unique format identifiers assigned to each original source vessel.

Because the cited combination of references fails to teach the elements of the claimed invention in which each member of a plurality of source vessels is assigned a unique format identifier and saving in a memory a map of the unique format identifiers assigned to each original source vessel, it is respectfully submitted that Claims 1-3 and Claims 8-10 are not obvious under 35 U.S.C. § 103(a) over Hunkapiller in view of Zeleny, Brown, Anderson, Shakib and Balaban and that this rejection may therefore be withdrawn.

Claims 4-7 and 11-14

Claims 4-7 depend from Claim 1 and Claims 11-14 depend from Claim 8. As set

forth above, the combination of cited references fails to teach the elements of the claimed invention in which each member of a plurality of source vessels is assigned a unique format identifier and saving in a memory a map of the unique format identifiers assigned to each original source vessel. As Claims 4-7 and 11-14 also include these limitations, the Appellant contends that these claims are likewise patentable over Hunkapiller in view of Zeleny, Brown, Anderson, Shakib and Balaban.

Additionally, Claims 4-7 and 11-14 are further distinguishable for specifying additional features relating to saving the identity map in a memory and communicating the identity map to a remote location. Claims 4 and 11 specify that the memory is a database; Claims 5 and 12 specify that the memory is a portable computer readable storage medium; Claims 6 and 13 specify that the portable storage medium is shipped to the same remote location as the array; and Claims 7 and 14 specify applying a same communication address to each of the substrates or housings carrying the substrates, which communication address identifies a remote location from which each identity map will be communicated in response to a received communication of the associated map identifier.

The Appellant submits that because the cited references fail to teach or suggest saving in a memory a map of the unique format identifiers assigned to each original source vessel as is claimed (discussed above), they likewise fail to teach or suggest the additional features relating to saving the identity map in a memory and communicating the identity map to a remote location. Therefore, the Appellant submits Claims 4-7 and 11-14 are further distinguished over the asserted teachings of Hunkapiller in view of Zeleny, Brown, Anderson, Shakib and Balaban and that this rejection may therefore be withdrawn.

Claims 45 and 49

Claim 45 depends from Claim 1 and Claim 49 indirectly depends from Claim 8 and further specify that the plurality of individual identified vessels is in a format of a tray with multiple wells.

In addition to being patentable over the cited references for the reasons discussed above with respect to Claims 1 and 8, the cited references neither teach nor suggest a method wherein the plurality of individual identified vessels is in a format of a tray with multiple wells.

Furthermore, because the cited references fail to teach or suggest the element of Claims 1 and 8 in which each member of a plurality of source vessels is assigned a unique format identifier (discussed above), they likewise fail to teach or suggest the additional features wherein the plurality of individual identified vessels is in a format of a tray with multiple wells. As such, the Appellant submits that Claims 45 and 49 are further distinguished over the asserted teachings of Hunkapiller in view of Zeleny, Brown, Anderson, Shakib and Balaban.

Claims 46 and 50

Claim 46 depends from Claim 45 and Claim 50 depends from Claim 49 (discussed above) and further specify that the multiple wells are arranged in said tray in rows and columns. In addition to being patentable over the cited references for the reasons discussed above with respect to Claims 45 and 49, the cited references neither teach nor suggest a method wherein the multiple wells are arranged in said tray in rows and columns. As such, the Appellant submits that Claims 46 and 50 are further distinguished over the asserted teachings of Hunkapiller in view of Zeleny, Brown, Anderson, Shakib and Balaban.

Claims 47 and 51

Claim 47 depends from Claim 46 and Claim 51 depends from Claim 50 (discussed above) and further specify that the individual identity of each vessel is an identifier in the format of: tray number, column number and row number. In addition to being patentable over the cited references for the reasons discussed above with respect to Claims 46 and 50, the cited references neither teach nor suggest a method wherein the individual identity of each vessel is an identifier in the format of: tray number, column number and row number. As such, the Appellant submits that Claims 47 and 51 are further distinguished over the asserted teachings of Hunkapiller in view of

Zeleny, Brown, Anderson, Shakib and Balaban.

Claims 48 and 52

Claim 48 depends from Claim 46 and Claim 52 depends from Claim 50 (discussed above) and specify that the individual identity of each vessel is an identifier assigned to each vessel relative to a reference mark.

In addition to being patentable over the cited references for the reasons discussed above with respect to Claims 46 and 50, the cited references neither teach nor suggest a method wherein the individual identity of each vessel is an identifier assigned to each vessel relative to a reference mark.

Furthermore, because the cited references fail to teach or suggest the element in which each member of a plurality of source vessels is assigned a unique format identifier (discussed above), they likewise fail to teach or suggest the additional features wherein the individual identity of each vessel is an identifier assigned to each vessel relative to a reference mark. As such, the Appellant submits that Claims 48 and 52 are further distinguished over the asserted teachings of Hunkapiller in view of Zeleny, Brown, Anderson, Shakib and Balaban.

Claim 53

Claim 53 depends from Claim 1 and additionally comprises receiving said array and map identifier and using said map identifier to identify vessels corresponding to regions of the array.

As set forth above with respect to Claim 1, the combination of cited references fails to teach the elements of the claimed invention in which each member of a plurality of source vessels is assigned a unique format identifier and saving in a memory a map of the unique format identifiers assigned to each original source vessel. As Claim 53 also include these limitations, the Appellant contends that Claim 53 is likewise patentable over Hunkapiller in view of Zeleny, Brown, Anderson, Shakib and Balaban.

Claim 53 is further distinguished over the cited references for additionally comprising receiving said array and map identifier and using said map identifier to identify vessels corresponding to regions of the array. The Appellant submits that the cited references neither teach nor suggest this additional limitation. Accordingly, this rejection may be withdrawn.

Claim 54

Independent Claim 54 is directed to a method of generating an addressable array in which each member of a plurality of source vessels is assigned with a unique format identifier and that a map of the unique format identifiers assigned to each original source vessel is saved in a memory as claimed in Claims 1 and 8. Therefore, Claim 54 is patentable over the cited references for at least the same reasons as Claims 1 and 8.

Claim 54 is further distinguished for specifying that each of the individual identified vessels is marked with a unique identifier that is not composition information from that vessel.

In the Final Office Action, the Examiner asserts that the claims may be interpreted with a broader meaning of the phrase "unique format identifier" and that "each member" can be interpreted to be each vessel or each biopolymer. In the following section, the Appellant will demonstrate why the Examiner's *prima facie* case of obviousness is deficient.

As set forth above, the format identifier physically identifies the original source vessel relative to other vessels in the original plurality, for example by tray number, column number, and row number. Furthermore, the claimed identity map is the collection of unique format identifiers assigned to each vessel in the plurality, which allows one to provide biopolymers in a plurality of vessels, deposit the biopolymers in a different spatial layout, and still be able to identify the particular source vessel for each biopolymer on the array.

In the instant specification, the unique identifier is described repeatedly as specifically marking an individual vessel from the plurality of vessels provided. Further, the disclosure makes no mention of a unique identifier that identifies the biopolymer instead of the vessel. Since the words of a claim must be read in light of the teachings of the specification, the language of the claims clearly limits the format identifier to the original source vessels and not the biopolymer.

Moreover, when describing the processor at the user station, the disclosure teaches that "once processor has obtained the identity map it can obtain additional array layout information, such as the sequence identity of each polynucleotide in each well and hence the sequence identity of polynucleotides at array features. Additional array layout information such as the polynucleotide sequences might be stored locally by the customer..." at P. 18, lines 5-10.

Therefore, it is clear that the polynucleotide sequences of each vessel are a completely separate entity from the identity map of format identifiers. As such, the claimed method would be inconsistent with the teachings of the specification if an identity map is first obtained, which includes a unique identifier that identifies the biopolymer, as asserted by the Examiner, and then in a subsequent step, obtain the same biopolymer information.

Therefore, the Appellant submits that the language of the claims clearly specifies that the unique format identifier is assigned to each member of the vessel and accordingly, cannot be given the broader meaning to further include the biopolymer. Accordingly, this rejection may be withdrawn.

Given the significant deficiencies in the cited references in teaching or suggesting all of the elements of the claimed methods of the invention, the Appellant submits that the Examiner has failed to establish a *prima facie* case of obviousness and respectfully request reversal of this rejection.

SUMMARY

I. Claims 1-14, 45-52 and 54 adequately convey to one of ordinary skill in the art, that Appellant was in possession of the invention as claimed and therefore, is in compliance with the written description requirement of 35 U.S.C. § 112 first paragraph and accordingly, do not represent new matter.

II. Claims 1-14 and 45-53 particularly point out and distinctly claim the subject matter which the Appellant regards as the invention, thus satisfying the requirements of 35 U.S.C. §112, second paragraph.


III. Claims 1-14 and 45-54 are patentable over Hunkapiller (US 5,942,609) in view of Zeleny (US 6,215,894), Brown (US 5,807,522), Anderson (US 6,456,942), Shakib (US 5,812,793) and Balaban (US 6,229,911) under 35 U.S.C. 103(a) because these references fail to teach or suggest at least the elements of assigning each member of a plurality of source vessels a unique format identifier and saving in a memory a map of the unique format identifiers assigned to each original source vessel.

RELIEF REQUESTED

The Appellant respectfully requests that the rejections of Claims 1-14 and 45-54 be reversed, and that the application be remanded to the Examiner with instructions to issue a Notice of Allowance.

Respectfully submitted,

Date: 12.20.05

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CLAIMS APPENDIX

1. A method of generating an addressable array of biopolymers on a substrate, comprising:
 - (a) providing a plurality of individual vessels each containing a biopolymer wherein said plurality is provided in a defined format;
 - (b) assigning a unique format identifier to each member of said plurality;
 - (c) obtaining the biopolymers from the plurality of individual identified vessels;
 - (d) depositing the biopolymers onto different regions of the substrate so as to fabricate the array;
 - (e) saving in a memory a map of the identity of the vessels to the corresponding regions of the substrate onto which the biopolymers from respective vessels are deposited, in association with a map identifier, wherein said map of the identity of the vessels comprises a unique format identifier of each vessel of said plurality;
 - (f) applying the map identifier to the substrate or a housing carrying the substrate;
 - (g) shipping the fabricated array with applied map identifier to a remote location.
2. A method according to claim 1 wherein the biopolymers are polynucleotides.
3. A method according to claim 2 wherein the biopolymers are DNA.
4. A method according to claim 1 wherein the memory is a database, the method additionally comprising obtaining the identity map from the memory and communicating the identity map to a remote location in response to receiving a communication of the map identifier from the remote location.
5. A method according to claim 1 wherein the memory comprises a portable storage medium, the method additionally comprising shipping the portable storage medium to a remote location.

6. A method according to claim 5 wherein the portable storage medium is shipped to the same remote location as the array.
7. A method according to claim 4 additionally comprising applying a communication address to the substrate or a housing carrying the substrate, which communication address identifies a remote location from which the identity map will be communicated in response to a received communication of the associated map identifier.
8. A method of generating, at a central fabrication station, addressable arrays of biopolymers on multiple substrates, comprising:
 - (a) providing a plurality of individual vessels in a defined format each containing a set of biopolymers from multiple remote locations;
 - (b) assigning a unique format identifier to each member of said plurality;
 - (c) receiving from each of multiple remote locations, the set of biopolymers in the plurality of individual identified vessels;
 - (d) for each received biopolymer set, depositing biopolymers obtained from the set onto different regions of the substrate so as to fabricate an array;
 - (e) saving in a memory a map of the identity of the vessels of each set to the corresponding regions of the substrate onto which the biopolymers from respective vessels of the set are deposited, in association with a map identifier, wherein said map of the identity of the vessels comprises a unique format identifier of each vessel of said plurality;
 - (f) applying the map identifier to the corresponding substrate or a housing carrying the corresponding substrate; and
 - (g) shipping each of the fabricated arrays with applied map identifier to one or more of the remote stations.
9. A method according to claim 8 wherein the biopolymers are polynucleotides.
10. A method according to claim 8 wherein the biopolymers are DNA.

11. A method according to claim 8 wherein the memory is a database, the method additionally comprising obtaining identity maps from the memory and communicating the identity maps to a remote location in response to receiving a communication of associated map identifiers from remote locations.

12. A method according to claim 8 wherein for each of multiple arrays the corresponding identity map and associated identifier are saved on a memory comprising a portable computer readable storage medium, the method additionally comprising shipping the portable storage mediums to multiple remote locations.

13. A method according to claim 12 wherein each of the portable storage mediums are shipped with the corresponding fabricated array to the same remote location from which the set of biopolymers used in fabricating that array was received.

14. A method according to claim 8 additionally comprising applying a same communication address to each of the substrates or housings carrying the substrates, which communication address identifies a remote location from which each identity map will be communicated in response to a received communication of the associated map identifier.

45. The method according to Claim 1, wherein said plurality of individual identified vessels is in a format of a tray with multiple wells.

46. The method according to Claim 45, wherein said multiple wells are arranged in said tray in rows and columns.

47. The method according to Claim 46, wherein said individual identity of each vessel is an identifier in the format of: tray number, column number and row number.

48. The method according to Claim 46, wherein said individual identity of each vessel is an identifier assigned to each vessel relative to a reference mark.

49. The method according to Claim 14, wherein said plurality of individual identified vessels is in a format of a tray with multiple wells.

50. The method according to Claim 49, wherein said multiple wells are arranged in said tray in rows and columns.

51. The method according to Claim 50, wherein said individual identity of each vessel is an identifier in the format of: tray number, column number and row number.

52. The method according to Claim 50, wherein said individual identity of each vessel is an identifier assigned to each vessel relative to a reference mark.

53. The method according to Claim 1, said method additionally comprising receiving said array and map identifier and using said map identifier to identify vessels corresponding to regions of the array.

54. A method of generating an addressable array of biopolymers on a substrate, comprising:

(a) obtaining the biopolymers from a plurality of individual identified vessels, wherein each of said vessels is marked with a unique identifier that is not composition information from that vessel;

(b) depositing the biopolymers onto different regions of the substrate so as to fabricate the array;

(c) saving in a memory a map of the identity of the vessels to the corresponding regions of the substrate onto which the biopolymers from respective vessels are deposited, in association with a map identifier, wherein said map of the identity of the vessels comprises an individual identity of each vessel of said plurality;

(d) applying the map identifier to the substrate or a housing carrying the substrate; and

(e) shipping the fabricated array with applied map identifier to a remote location.

EVIDENCE APPENDIX

No evidence that qualifies under this heading has been submitted during the prosecution of this application, and as such it is left blank.

RELATED PROCEEDINGS APPENDIX

As stated in the *Related Appeals and Interferences* section above, there are no other appeals or interferences known to Appellant, the undersigned Appellant's representative, or the assignee to whom the inventor assigned his rights in the instant case, which would directly affect or be directly affected by, or have a bearing on the Board's decision in the instant appeal. As such this section is left blank.